REMARKS

Claims 1-13 are pending in the above-identified application. Support for the changes to claims 3-6 is found in original claims 3-5. Support for new claim 8 is found at page 6, lines 13-15 of the specification. Support for new claims 9 and 10 is found at page 8, line 23 to page 9, line 9, as well as in the examples of the specification. Support for new claims 11-13 is found in original claim 7.

Claim Objection Issue

Claims 6 and 7 have been objected to under 37 C.F.R. 1.75(c) as being in improper multiple dependent form. Claims 6 and 7 have been amended along with most of the other pending claims. It is submitted that all of the presently pending and new claims comply with dependency requirements, as well as all other applicable formal requirements, such that the above-noted rejection should be withdrawn.

Issues Under 35 U.S.C. 103(a)

Claims 1-5 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Yago '237 (USP 5,847,237). This rejection is traversed for the following reasons.

Distinctions Between Present Invention and Yago '237

Yago '237 is directed to a catalyst for orthoalkylation of phenols, wherein the catalyst is obtained by calcination of a catalyst precursor which is a mixture of: (a) manganese oxalate; (b) phenolic resin fine particles; and (c) at least one magnesium compound selected from basic magnesium carbonate and magnesium hydroxide.

Yago '237 fails to disclose an orthoalkylation catalyst which is produced by calcining a catalyst precursor of (a) magnesium carbonate and (b) magnesium oxide. It appears that the Patent Examiner has incorrectly concluded that the magnesium "hydroxide" disclosed by Yago '237 is equivalent to the magnesium "oxide" used in the catalyst of the present invention.

In addition to the above, it is submitted that Yago '237 fails to recognize the advantages achieved by the present invention. In this regard, it is noted that the present invention aims to provide an orthoalkylation catalyst for phenols having higher activity, higher selectivity and prolonged catalytic life as compared with the conventional ones, and moreover being regeneratable. These and other objects can be realized by a catalyst obtained by calcining a catalyst precursor comprising basic magnesium carbonate (a) and magnesium oxide (b) in a weight ratio ((a)/(b)) of 20/80 to 80/20 as claimed in claim 1.

The magnesium oxide (b) contained in the catalyst precursor of the present invention is firstly used as a binder (binding agent) component during the preparation of the catalyst precursor, and then it functions as a catalyst component after the calcinations of the precursor (see page 6, lines 17-20 of the specification).

In contrast, the catalyst precursor of Yago '237 contains (a) manganese oxalate, (b) phenolic resin fine particles, and (c) at least one magnesium compound selected from basic magnesium carbonate and magnesium hydroxide. The phenolic resin fine particles (b) in the catalyst precursor act as a binder component for the catalyst precursor (see column 4, lines 21-23 of Yago '237). Yago '237 further discloses at column 5, lines 6-7 that the calcinations brings about thermal decomposition of the binder. Therefore, decoking on the regeneration of the catalyst at high temperatures with passage of air through the catalyst layer causes the organic phenolic resin to be (completely) burnt off, and the absence of the binder results in drastically deteriorated strength. That is, regenerating becomes difficult.

As is clear from the above, the catalyst of the present invention is regeneratable whereas the Yago '237 catalyst is not.

In the present invention, preferably, the catalyst precursor is formed by admixing a mixture of basic magnesium carbonate (a) and magnesium oxide (b) with water to convert to magnesium

hydroxide partially or completely, as defined in new claim 9. That is, water is added to the mixture. When such a catalyst precursor is calcined and the water is completely evaporated, the magnesium oxide is regenerated, and the regenerated catalyst can maintain sufficient strength as shown in Examples.

Meanwhile, the Yago '237 catalyst uses the basic magnesium carbonate expressed as $3MgCO_3 \cdot 2Mg(OH)_2 \cdot 3H_2O$ which cannot be hydrated.

Therefore, the catalyst of the present invention is obtained by a patentably different process from that of Yago '237.

Also, as the Office Action admitted, Yago '237 is completely silent about the claimed mixing ratios, and the mixing ratio of the components (a) and (b) is important for the catalyst of the present invention, though the Examiner states that the claim range is so broad as to embrace most of the possible ratios.

As shown in inventive Examples 1 to 3, the magnesium oxide is mixed with the basic magnesium carbonate in the claimed ratio to provide far longer and stable catalytic life (hr) over the conventional catalyst consisting solely of magnesium oxide (Comparative Example). Thus, the regenerated catalysts of the present invention exhibit significantly improved strength when the magnesium carbonate and magnesium oxide are combined in ratios within the parameters of the present invention.

Conclusion

It is submitted for the reasons stated above that the present claims define patentable subject matter such that this application should now be placed condition for allowance.

Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants hereby petition for an extension of one (1) month to December 10, 2004, in which to file a reply to the Office Action. The required fee of $55.00 is enclosed herewith.

If any questions arise regarding the above matters, please contact Applicant's representative, Andrew D. Meikle (Reg. No. 32,868), in the Washington Metropolitan Area at the phone number listed below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,
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